

VOLUME 1

NUMBER 7

MONTANA WILD LIFE

DECEMBER

OFFICIAL PUBLICATION OF THE
MONTANA STATE FISH AND GAME DEPARTMENT

The Open Trail

By

Constance Marion Simpson

Helena, Montana

*I'm leaving the city of brick and steel,
Where the restless millions flow;
I'm going back to a life that's real,
Away from the sham and show;
You can have your buildings that tower on high,
Your traffic that hums and roars;
It's me for the arch of the kindly sky—
The life of the big outdoors.*

*I've served my time in the busy mart,
A martyr to clock and bell,
And I'm off again to Nature's heart,
For rest and a breathing spell!
I'm hiking back to the unmarked ways,
Where the wind blows clean and free;
It's the silvery nights and the golden days—
And the hills and the plains for me!*

*I have turned my back on the vast turmoil,
Where the workers come and go;
I have said Goodbye to a life of toil,
In the city's vast ebb and flow!
I have closed the book on a ten-hour creed,
And shaken my dinner pail,
And I've got no boss but myself to heed—
And the boss of the OPEN TRAIL!*



MONTANA WILD LIFE

The Official Publication of The State Fish and Game Commission

VOL. I.

HELENA, MONTANA, DECEMBER, 1928

NO. 7

Sportsman's Dollar Aids Stockman



R. E. Bateman

MONTANA sportsmen who are aiding in supporting the State Fish and Game Commission's program of wild life conservation are likewise lending a helping financial hand in protecting cattle and sheep and game from devastation by predatory animals. According to authoritative figures compiled by the state livestock commission and the Fish and Game Department, 68,885 resident hunting and fishing licenses were sold in the state at

\$2 each in 1927 while at the same time \$18,777 was paid out in bounties for the killing of 9,358 coyotes, one wolf, two wolf pups and two mountain lions.

Careful analysis of these figures is illuminating to men who love the out-of-doors and who are likewise interested in knowing that their moral and financial efforts are bringing results.

Montana's State Fish and Game Commission is maintained solely by funds derived from the sale of hunting and fishing licenses, fines collected for violations of the fish and game laws, the sale of confiscated furs and arms and the issuance of licenses to guides, trappers, fur farms, beaver permits and the tagging of beaver skins. The Department is given no state appropriation. It draws nothing from the general fund and is entirely self-supporting.

Out of funds paid into the Department, the staff of 24 deputies in the 56 counties is paid, operating expenses of 14 state fish hatcheries are met, rearing ponds are being constructed on a cooperative basis with clubs of sportsmen, the only biological station of its kind in the nation is maintained on Flathead Lake, the largest warm water rearing pond in the world is operated at Fort Keogh near Miles City and the greatest spawn-taking station known to exist is conducted at the mouth of Flint creek on Georgetown Lake.

Then there are expenditures for Hungarian partridges, Chinese pheasants and other wild life liberated in the

state, the purchase of thousands of pounds of fish food annually, the planting of duck food, the acquisition of shore lines for future hunting grounds for posterity, the creation of game preserves and scores of other activities in which every sportsman and member of the Commission is intensely interested.

Few Montana sportsmen are familiar with these salient facts. Few realize that 25 cents out of every \$2 paid for a resident hunting and fishing license goes into the biological fund to pay bounties and aid in maintaining the staff of hunters engaged in predatory animal control. Under the leadership of R. E. Bateman, this staff of hunters is accomplishing gratifying results.

Three departments maintain this staff of animal experts in order that game as well as sheep and cattle may be protected. There are the members of the staff maintained by the federal government, those paid by the State Fish and Game Commission and those paid by the livestock commission. The entire staff of the three divisions varies in number from 15 to 25 during different seasons. These men are salaried hunters. They receive no bounty for the predatory animals killed. The hides and fur taken by the hunters are shipped to Billings periodically and sold at public auction.

Hunters of the Biological Survey are more effective in their work than farmers and stockmen who trap and kill for bounty alone, according to R. E. Bateman, leader of predatory animal control.

"The bounty hunter is looking forward largely to the cash to be collected for the scalp as well as to the welfare of his flock," said Mr. Bateman, "while the paid biological hunter goes after killers and gets them. Take, for instance, a band of sheep that has been attacked by coyotes or bear. The federal hunter will mark down and trap or kill the marauder. The bounty hunter may permit the killer to run at large while he traps out a nest of pups and devastation among the sheep continues because the killer is too crafty for wiles of the farmer."

Figures accompanying this article show that Montana has 10 counties in the 56 where the bounties paid on predatory animals reach a figure greater than that paid by sportsmen for resident hunting and fishing licenses. In Carter county only eight resident licenses were issued in 1927, bringing \$16, while \$606 was paid in bounties. True it is that in many of these counties there is little hunting or fishing, yet the figures demonstrate the extremes to which sportsmen, under the law, are going in efforts to exterminate predatory beasts.

Receipts from fur sales of animals trapped by federal hunters cooperating in Montana are sent to the biological fund at Washington, D. S. Receipts from the sale of Montana furs trapped by hunters employed by the state livestock commission go into the state livestock fund. Receipts from fur sales of animals trapped by hunters employed by the Fish and Game Commission go into the fish and game fund.

Montana's law now provides that \$7,500 annually shall be taken out of the fund made up of 25 cents subtracted from each license fee, for the biological fund to pay bounties on predatory animals. After the \$7,500 has been contributed what remains is used to employ hunters. This amount has been so small at times that the fund has been exhausted early and hunters financed by the Fish and Game Department have been called in when most needed in the field.

The Montana Department of Agriculture has issued an estimate showing that Montana's population on January

BOUNTY ON ANIMALS EXCEEDS LICENSE FEE

MONTANA has 10 counties in which, according to statistics compiled by state livestock experts for 1927, the bounty fee on predatory animals exceeds the license fund paid by sportsmen for the right to fish and hunt within the state. These resident sportsmen pay \$2 for their licenses and 25 cents out of each license fee goes into the biological fund. The following figures are significant:

County	Total Licenses	License Fees	Bounty Paid
Blaine	390	\$780	\$1,354
Carter	8	16	606
Fallon	34	68	242
Liberty	47	94	378
McCone	12	24	168
Petroleum	61	122	204
Powder River	24	48	375
Prairie	40	80	208
Valley	382	764	1,114
Wibaux	47	94	98

1, 1928, was 546,078. The estimated population has been prepared by counties. Taking these figures as a basis, and comparing them in parallel columns with resident license figures and the bounty paid in each county, these amazing comparisons result:

	1927 Number of Licenses	1927 Fees for Resident Licenses	1927 Amount Paid in Bounty	Estimated 1927 Popula- tion
Beaverhead	1,737	\$3,474	\$1,861	5,061
Big Horn	539	1,078	32	9,569
Blaine	390	780	1,354	6,960
Broadwater	570	1,140	30	2,637
Carbon	2,597	5,194	106	14,032
Carter	8	16	606	3,432
Cascade	5,908	11,816	542	39,384
Chouteau	572	1,144	412	7,348
Custer	433	866	90	11,224
Daniels	189	378	214	6,516
Dawson	266	532	166	8,895
Deer Lodge	2,630	5,260	.....	19,642
Fallon	34	68	242	4,507
Fergus	1,942	3,884	2,170	17,975
Flathead	4,657	9,314	34	18,533
Gallatin	3,586	7,172	244	17,849
Garfield	12	24	88	4,368
Glacier	345	690	6	5,843
Golden Valley	115	230	116	2,665
Granite	591	1,182	.....	3,278
Hill	1,225	2,450	1,968	12,677
Jefferson	696	1,392	20	4,569
Judith Basin	758	1,516	132	4,342
Lake	1,491	2,982	.....	9,810
Lewis & Clark	3,839	7,678	60	18,384
Liberty	47	94	378	1,571
Lincoln	1,973	3,946	.....	8,263
Madison	1,416	2,832	190	6,058
McCone	12	24	168	4,686
Meagher	594	1,188	46	2,209
Mineral	644	1,288	2	2,613
Missoula	1,350	2,700	44	18,819
Musselshell	813	1,626	212	7,286
Park	2,558	5,116	122	11,002
Petroleum	61	122	204	2,176
Phillips	347	694	2,412	7,476
Pondera	565	1,130	270	6,108
Powder River	24	48	373	3,058
Powell	1,544	3,088	.....	5,734
Prairie	40	80	208	4,045
Ravalli	1,930	3,860	.....	9,061
Richland	163	326	206	9,674
Rosebud	231	462	150	7,276
Roosevelt	373	746	548	11,513
Sanders	1,208	2,416	2	4,731
Sheridan	629	1,258	218	10,418
Silver Bow	8,196	16,392	.....	64,808
Stillwater	1,071	2,142	162	6,761
Sweet Grass	630	1,260	232	4,176
Teton	522	1,044	532	5,978
Toole	833	1,666	46	4,908
Treasure	50	100	8	1,066
Valley	382	764	1,114	13,802
Wheatland	659	1,318	204	4,184
Wibaux	47	94	98	2,339
Yellowstone	2,943	5,886	130	35,259
Totals	68,855	\$137,770	\$18,777	546,078

The pay roll for October shows the division of hunters engaged in predatory animal eradication under supervision of R. E. Bateman:

Federal Hunters

Lewis Bakken, Custer county.
R. E. Bateman, Yellowstone.
Oscar N. Evans, Powell.
J. E. Hurley, Beaverhead.
Peter Manaige, Wheatland.
L. G. Mason, Golden Valley.
R. P. McFarland, Fergus.
Walter Standish, Big Horn.
Pete Vermandel, Yellowstone.
Ben P. Vogler, Mineral.

Game Commission Hunters

Earl Boyoo, Phillips county.
Lewis Conner, Powell.
John Krane, Beaverhead.
Lynn Marsh, Yellowstone.
Burt Parma, Hill.
Fred Reinhardt, Meagher.
Roy Vance, Broadwater.
Lee Vermandel, Rosebud.
R. B. Warren, Meagher.

Livestock Commission Hunters

C. E. Beebe, Glacier county.
Matt Berger, Garfield.
Stephen Boyce, Valley.
Oscar Brunett, Beaverhead.
M. G. Daniel, Wheatland.
Chauncey Groom, Rosebud.
Dock Groom, Rosebud.
Ed Guenther, Prairie.
Ted Johnston, Madison.
Arthur Sime, Gallatin.
Denny Wonder, Madison.

During October the federal government pay roll for its share of the Montana hunters reached \$1,145, the livestock commission hunters received \$1,239 and the Fish and Game Commission hunters \$1,016. The report for the month shows that federal hunters killed 92 coyotes, the livestock commission hunters bagged 87 coyotes and the Fish and Game Department hunters 72.

The following table, prepared by the Montana livestock commission, is likewise illuminating. It shows that in 1927 a total of 9,359 coyotes was presented for bounty and that the total amount paid to bounty hunters in the 56 counties last year was \$18,777. Included in the amount paid in bounties was the fee for two mountain lions in Fergus and Missoula counties, a wolf and two wolf pups in Powder River county:

Statement of Bounty Paid—1927

County	Coyotes	Bounty Paid
Beaverhead	932	\$ 1,864.00
Big Horn	16	32.00
Blaine	677	1,354.00
Broadwater	15	30.00
Carbon	53	106.00
Carter	303	606.00
Cascade	271	542.00
Chouteau	206	412.00
Custer	45	90.00
Daniels	107	214.00
Dawson	83	166.00
Deer Lodge	.....	.....
Fallon	121	242.00
Fergus	1,075	2,150.00
Flathead	17	34.00
Gallatin	122	244.00
Garfield	44	88.00
Glacier	3	6.00
Golden Valley	53	116.00
Granite	.....	.....
Hill	984	1,968.00
Jefferson	10	20.00
Judith Basin	66	132.00
Lake	.....	.....
Lewis and Clark	30	60.00
Liberty	189	378.00
Lincoln	.....	.....
McCone	84	168.00
Madison	95	190.00
Meagher	23	46.00
Mineral	1	2.00
Missoula	12	24.00
Musselshell	106	212.00
Park	61	122.00
Petroleum	102	204.00
Phillips	1,206	2,412.00
Pondera	135	270.00
Powder River	178	356.00
Powell	.....	.....
Prairie	104	208.00
Ravalli	.....	.....
Richland	103	206.00
Roosevelt	274	548.00
Rosebud	75	150.00
Sanders	1	2.00
Sheridan	109	218.00
Silver Bow	.....	.....
Stillwater	81	162.00
Sweet Grass	116	232.00
Teton	266	532.00
Toole	23	46.00
Treasure	4	8.00
Valley	557	1,114.00
Wheatland	102	204.00
Wibaux	49	98.00
Yellowstone	65	130.00
Totals	9,359	\$18,777.00

Shore Birds Winter in South America

WHERE do our migrating shore birds go when they leave their breeding grounds in the northernmost parts of North America for the south in the winter? Many persons would reply that they supposed the birds go to the marshes along the gulf coast or perhaps down into Mexico and Central America.

Such an answer would be in error, for many, if not most, of the shore birds live in summer season practically the whole year around. When they leave their northern home early in fall, it is to fly southward into spring in South American localities more or less similar to those they frequent in their northern summer months. The woodcock, according to Dr. Alexander Wetmore, formerly a biologist in the Biological Survey of the United States Department of Agriculture and now Assistant Secretary of the Smithsonian Institution, is the only species of shore bird hunted as game that does not in part cross the equator during its southern flights.

On September 6, 1920, Doctor Wetmore was in the Chaco in western Paraguay and notice the first flights of golden plovers to arrive there. On the same day a party under Francis Harper, of the Biological Survey, observed golden plovers that had not yet left Lake Athabasca in northern Alberta, Canada. Doctor Wetmore spent approximately a year in Paraguay, Uruguay, Argentina, and Chile observing and collecting information regarding migrant shore birds. Of the list no fewer than 24 species of shore birds pass as far south as Argentina and Chile, and migrant shore birds are known on the Falkland Islands and in Patagonia of the southern part of South America are among the important areas concerned in the welfare of the shore birds. Increase of human population and expansion of the cultivated areas of South America are having their effect on the number of the migrants, as also are the hunting customs in the South American countries. Protective legislation there is in its infancy, and many game birds have little or no protection, although Doctor Wetmore finds that there is a growing tendency to establish closed seasons and to limit the butchery of game.

DECORATED FOR BRAVERY

Little Doris: Did you have many love affairs, daddy?

Father: No, dear; I fell in the first engagement.

TIME, PLEASE

Parson: Does you-all take this man fo' bettah or fo' worse?

Bride-elect: Lan' sake, pahson, how kin Ah tell so soon!

MEDICAL AID

Smiff: How did Joseph manage to reform that nagging wife of his?

Bjones: He bribed her beauty doctor to tell her that talking caused wrinkles.

Science and The Chinese Pheasant



R. H. Hill, State Game Warden

While the Montana State Fish and Game Commission has conducted an interesting experiment in declaring a two-day open season on the imported Chinese pheasants, in selected localities, it's mighty interesting to dig into scientific information and find just what eminent experts have discovered in an intimate study of the life and habits of the gaily colored strutter, whose habits have caused so much discussion of late in Montana. According to a history of the species prepared for the Charles R. Conner Museum of Washington State College by Dana J. Leffingwell, Ph.D., curator, the pheasant is one of the birds well known to the ancients and was held in great esteem. The species was discovered by the Greeks on the banks of the River Phasis, now known as the Rion, in 1263 B. C. and was called by them Phasianus Ornis, the Phasian bird. In late years the bird has been introduced around the world because of its ease of artificial propagation.

In his extensive treatise on the life and habits of the birds, Dr. Leffingwell continues as follows:

Calls

There are certain calls given by pheasants which show their feelings. The challenge crow of the cock and the alarm cackle of the frightened bird, both indicate the emotions of the bird at the time they are given. The calls may be given with varying degrees of loudness, yet all seem divisible into emotional notes.

I have observed five distinct calls in the young birds up to seven weeks of age. These may be classified as follows: Content call—this is usually given either when the birds are feeding or when they are about to settle down for the night. This call sounds like ter-rit or ter-wit, accented on the last syllable, and is given in about the same key as the alarm call. Caution call—this call appears to be a modified content call, but is given more loudly and with a bubbling effect, best interpreted as terreep or turreep. The note is given when something peculiar is placed before the chicks, for on several occasions I gave the little birds earthworms, which they would approach and survey, uttering this call. Flock call—the flock call is usually given when the birds are scattered and serves as an aid in reuniting the chicks. This note may be written tee-erp, or pre-

erp and is repeated at short intervals. Alarm call—this call is given as a warning note when any strange thing appears, and is usually not repeated. It may be written as tee-u, sharply and quickly given. Fright call—this is a loud peeping, which the bird gives with all its might, and is usually only given when the chick is caught by one of its enemies. When uttered, it will frighten all the pheasants within earshot to cover. It may be written as tee-erp, accented on the first syllable. It sounds much like the loud flock call, but is always given more vehemently and loudly than the rally note.

When about seven or eight weeks old the young male pheasants often attempt to crow. At this time it is entirely a vocal effort, for I have observed no wing beating. Sham battles between young cocks were observed at this time. When alarmed the birds will often "cucklet," uttering the characteristic alarm note of the male pheasant.

The most common calls of the adult birds are the challenge calls, and the alarm note. The challenge call is a drawn-out utterance, and might be written a w k—kack, the first part of the note being about twice as long as the latter part. The actions accompanying the call seem to me to be as follows: When about to crow, the cock draws himself up into an erect position. At least two strokes of the wings are given preliminary to the call, which, after an interval of approximately one-twenty-fifth of a second is followed by a rapid flapping of the wings, from five to seven strokes being given. The wings are held rather stiffly, and the force of the beat is directed upwards and inwards, somewhat after the manner of a drumming partridge. The two preliminary wing beats are given at intervals of about one-twenty-fifth of a second, while those given after the call begin very rapidly but soon diminish in vigor. The force of the latter strokes seems to push the pheasant backwards against its tail, which is partly flattened on the ground and acts as a brace.

The alarm call is often known as the "cucklet" note. It is a di-or tri-syllabic call which may be given as cucklet, tucket, or tucke-tuck. When suddenly frightened from the ground, the male birds invariably give the tri-syllabic call, as they fly away to safety.

The challenge call and the alarm notes are the ones most frequently heard, for it is only by good fortune that one can get close enough to wild pheasants to hear their other notes.

Habits

Locomotion—Walking: The gait of an undisturbed pheasant is slow and dignified, the average length of each step being about four inches. The birds usually do not go far without stopping to look around, for with them, as with other brightly colored birds, constant

vigilance is always necessary. The male bird often prefers to fly away when frightened, while the female usually crouches, relying on her protective coloration. Both sexes will take to the air when alarmed by a dog or a fox.

Running: Pheasants, males especially, are very adept at running off through the vegetation without hardly moving a grassblade. The birds can travel quite swiftly in this way, and for this reason are disliked by hunters, especially those who use a hunting dog. When running through the grass the body is held low, and the neck is outstretched, parallel to the ground. The average distance between tracks of a running bird is usually about six inches when the bird is in the vegetation, and about twelve inches when it is in the open. This has been determined by measuring the distance between tracks in the snow.

Swimming: Tegetmeier (1911) gives several instances of pheasants swimming across bodies of water. Both young and old birds have been seen swimming. Beebe (1922) notes that crippled birds have been seen to swim across rivers in China.

Flying: The flight of pheasants is quite swift, though Beebe (1922) finds that it is not as strong as in some other members of the family. Cock birds are stronger fliers than are the hens, and with a few rapid wing-beats can soon fly out of danger.

The distance which a pheasant can fly is generally considered to be less than a mile. Tegetmeier (1911) gives a record of two hens which were believed to have flown across the river Humber in England, a distance of four miles, but this was with a strong breeze behind them. Other records given by this same writer, however, show that birds attempting to cross bodies of water usually gave up after flying three-fourths of a mile.

In flight the feet are usually carried under the tail, although if the bird flies but a short distance, they are drawn up close to the breast. Townsend (1909) observes that pheasants may carry their feet in front, drawn up against their breast, when flying but a short distance or when just starting to fly, but when well on the wing, they extend the feet close under the tail and under tail coverts. Young pheasants when flying more than 15 or 20 feet, usually put their feet up under the tail, a habit which is learned when the birds are about five weeks old.

Tegetmeier (1911) finds that the velocity of flight of pheasants, as tested by Mr. R. W. S. Griffith in 1881 was over 30 miles per hour, the fastest bird attaining a speed of 38 miles per hour.

Roosting: As a rule pheasants prefer to spend the night on the ground, although it is not uncommon to find them roosting in the trees. Where ground vermin is plentiful the birds

usually take to the trees to spend the night, and are especially partial to larch or tamarack trees (*Larix* sp.). Finley (Ms) observes that in Oregon, pheasants are now roosting in the trees.

Dusting: Pheasants are fond of dusting, probably to control lice and mites. According to Allen (1924) this was observed by the Greek philosopher Aristotle, who, in writing some three centuries before Christ says, "Some birds dust themselves and others bathe, some neither dust nor bathe. Those that do not fly but live on the ground, dust themselves, as the domestic fowl, partridge, grouse, lark and pheasant."

Peregrinations: It is a well known fact that pheasants have a tendency to stray away from their home coverts. The distances which the birds travel have never been ascertained, although Merriam (1889) notes that within two months after some pheasants were released in Oregon, a pair was observed 50 miles from where the birds were set at Liberty.

In 1925, with the assistance of Prof. Arthur A. Allen, 466 young pheasants were banded by the author in an effort to obtain some accurate data on their wanderings. Twenty-four of these birds were taken during the past few years near Ithaca, of which we have accurate data on 16. Of these records of travel, but two exceeded two miles, while the average distance covered was but one and one-fifth miles. One bird, however, went six miles, and another three miles.

Response to shocks: Pheasants appear to be extremely sensitive to tremors and shocks. It is probable that the crowing which these birds give on apparently hearing distant explosions and the like, may not be hearing but rather feeling the shock or tremor caused by the explosion. Apparently pheasants will respond by giving their alarm note, not only to audible notes like the report of a firearm, but also to distant shocks due to earthquake, or heavy explosions, which apparently they feel rather than hear. The Japanese pheasant (*P. versicolor*) was tested to learn its response to earthquake tremors by Professor F. Omori (1923). The bird was found to be exceedingly sensitive to earth tremors, even when so slight as to be unobserved by humans.

Observation of a pheasant in Japan by Professor Omori during a period of about three years during which 23 earthquakes were recorded on the seismograph showed that the bird crowed before, after or during every slight shock. In 34 per cent of the cases the pheasant crowed before the seismograph recorded the shock, hearing the instrument by as much as eight seconds. In 20 per cent of the occurrences the pheasant crowed simultaneously with the sensitive earthquake motion. In another 20 per cent of cases, the bird crowed when the shock was too slight to be felt by human observers, and in 21 per cent of the occurrences the crowing was performed after the earthquake was recorded. In but one case or 4 per cent of the tremors, did the bird fail to crow at all.

Thorburn (1916) observes that cock pheasants appear to be susceptible to an extraordinary degree to any air

concussions or unaccustomed sounds which they will at once challenge. The crowing, in Norfolk especially, was thought to be foretelling Beatty's battle of the North Sea. Hartley (1922) notes that "during the World War the pheasants in England developed into fairly responsible sentinels against Zeppelin attacks. The birds seemed particularly sensitive to far-off explosions and a raid generally was heralded by a concerted crowing of cocks."

Enemies

In the United States, pheasants have many enemies. Not only are they killed by predatory birds and animals, but they are also destroyed by forest and brush fires, mowing machines, by man and his two companions, the dog and the cat. Other mammalian enemies which are worthy of notice are the mink, the skunk, the weasel, the fox and the coyote. The cat and the dog, even though domesticated, are considered among the worst enemies of the pheasant.

Among the birds, the hawks and owls as a group, may account for some pheasants. Falcons and accipitrine hawks have been found to be guilty of killing pheasants; and the great horned owl, the snowy owl and the screech owl are also known to kill these birds. Crows and magpies are probably the worst enemies of pheasants during the breeding season, as both have a great liking for the eggs, and newly hatched young. By attacking in flocks these robbers can soon plunder a nest of its eggs, even though the mother bird does her best to protect it.

Feeding and Foods

Time of Feeding: Pheasants apparently feed twice a day, in the early morning and again before sunset. The birds will take insects or seeds as they see them throughout the day, but there is no distinct search for food during those hours. Pheasants shot in the early morning and in the late afternoon usually have their crops full, while those collected about mid-day more often have empty gullets.

Feeding takes place quite locally during the breeding season, and it is probably to insure a good food supply for his mates that the cock defends his chosen territory. After the breeding season is over, and especially during the winter months when food is scarce, pheasants are apt to travel a long way probably in search of food and suitable cover.

Foods: In general the foods of the pheasants are weed seeds, insects and cultivated crops. Of the latter, the cereal grains are preferred and of these corn seems to be the favorite. The seeds and fruits of 14 kinds of cultivated crops are known to be eaten by pheasants, although for the most part no great damage is done by the birds. Pheasants rarely bud trees, after the manner of the ruffed grouse. Buds were found in two birds from the vicinity of Ithaca, N. Y., but they did not compose a large percentage of the food.

In my study of the food habits of these birds it was found that beetles formed the largest portion of the pheasant's insect food; for 42 species were found in the stomachs, and 417 indi-

viduals. Nine species of Lepidoptera, eight species of crickets and grasshoppers and 26 species of other insects and invertebrates make up the remainder of their animal food.

The seeds or fruits of 101 species of wild plants were found in the stomachs of pheasants. Of these plants, 40 are considered weeds and 59 are held to be neutral in value. Only two species of wild fruits, the wild raspberry and the wild black cherry, were taken.

Amount of Food: Pheasants seem to feed on whatever is easiest to obtain. If they are living in weedy regions, or insect-infested areas, they will doubtless do much good; while if their habitat is grain fields, they may do some damage to the crops. In my examination of stomachs and analyses from all sources in the United States, it was found that the three seeds most commonly eaten were ragweed, smartweed and foxtail. More than 10,000 seeds of foxtail, 7,500 seeds of ragweed and 5,000 seeds of smartweed had been eaten by these birds. In one stomach more than 5,000 seeds of foxtail were found. Usually the crop of a pheasant taken after feeding was about two inches in diameter, although one bird had fed so as to stretch its crop to its fullest extent, so that the crop measured three inches in diameter. This was an unusual case.

Economic Importance

Both praise and blame are due the pheasant for its feeding habits. Many people find that pheasants are highly beneficial, because of their consumption of weed seeds and insect pests; others believe that the birds are a menace to agriculture and should be destroyed and eradicated.

Positive Value: Let us consider the benefits which we derive from these birds. Pheasants may be classed as beneficial to mankind because, (1) they are weed seed destroyers; (2) they are insect pest destroyers; (3) they are rodent destroyers; (4) they are game birds.

As weed seed destroyers, pheasants rank high in some parts of the country. In states, however, where much of the land is planted to grain and other crops, the birds prefer the cultivated cereals. In the vicinity of Ithaca, N. Y., where much of the land is covered with weeds, pheasants do much good in controlling the spread of these noxious plants by feeding largely on their seeds. In an examination of the food of 76 birds, Eaton (Ms) found that the seeds of amaranth, pigeon grass, goose-foot, ragweed, burdock, and various species of smartweed occurred in many of the stomachs.

It is the general consensus of opinion that during the summer pheasants are for the most part insectivorous. Mr. Ware (in epist. June 10, 1923) writes that he has found as many as 47 grasshoppers in the crop of a pheasant. Burch (1920) finds that in the summer the principal food of the pheasant seems to be insects, such as grasshoppers, June bugs and caterpillars, and further notes that the birds often eat ants.

In the fields and gardens pheasants are also beneficial as is proven by the analysis of the crops of two pheasants examined by W. L. Finley. A female

pheasant, killed in Oregon on the first day of November, had eaten 34 grasshoppers, 3 crickets, 8 beetles and 280 weed seeds. The crop of another bird taken during the same month contained 303 cut worms and 60 blue fly maggots.

In Minnesota, F. D. Blair, the superintendent of game farms, believes that pheasants destroy more mice per bird than do most of the hawks and owls (Anon. 1924).

It is, however, as game that the pheasant best serves man. In the northeastern states, especially — where the heath-hen and the wild turkey, which a century ago were highly esteemed as upland game, have vanished over all their former range, where the ruffed grouse is fast disappearing as more and more of its habitat is claimed for agricultural purposes, and where the bob-white is nowhere plentiful—the ring-necked pheasant has found a place for itself as a bird worthy of the hunter's skill. Thousands of these birds are killed every year, and in their pursuit afford much pleasure to the sportsmen.

In the middle and far west pheasants have been acclaimed as worthy of the title game. In Idaho, Oregon and Washington ring-necks are more hunted than are most of the native species, not only because of their many gamy qualities, but also for their delicious flesh and gorgeous plumage. Pheasants are truly game birds, for they are both hardy and prolific, and in the wild state are quite free from diseases. They are easily propagated artificially, and if given protection from their enemies will increase very rapidly.

Negative Value: Pheasants may be injurious to agriculture in several ways. They may be destructive to beneficial insects and to newly-planted or sprouted crops, as well as to garden produce. Their destruction of beneficial insects cannot be controlled, but as these are eaten for the most part in uncultivated areas, this damage is not great.

Comparatively few beneficial insects seem to be eaten by the pheasant. Of these, the only one which is utilized not uncommonly by these birds is the tiger beetle, *Cicindella 6-guttata*. The larvae of these beetles prey upon other insects, most of which are considered harmful.

The state game warden of Idaho writes that in that state pheasants are more or less destructive to crops, corn in particular, in some instances destroying entire rows of corn at or about the time the first sprouts appear through the ground. Dr. E. W. Forbush tells me of an instance in Massachusetts where a whole field of corn was destroyed by pheasants, but this was before pheasant shooting was allowed there. Pheasants are also injurious to garden truck.

Pheasants are said to be destructive to other game, especially grouse and quail, and they have also been accused of killing young rabbits, but there seems to be no basis for these beliefs.

From this evidence it might seem that pheasants are far more harmful than beneficial, and that they should be reduced in numbers so that the loss to agriculture would not be so great. But rather than remove or kill off the

birds which have been raised and distributed at great expense by the state, let us see if their depredations can not be controlled in some way.

The greatest damage done by pheasants is to newly-planted or newly-sprouted corn. Probably pheasants are blamed for much of the work of crows, which are also fond of this grain. Kalmhack (1920) finds that the damage to corn and other grains done by crows may be lessened by treating the seed with a deterrent, such as coal tar or red lead. Coal tar, this writer continues, "should be used in the proportion of about a tablespoonful to half a bushel of seed grain, the grain having been previously heated by the application of warm water, and then drained. A continued stirring of the grain will eventually result in an even coating of tar. The seed may then be spread out on a dry surface or may be dried by the application of an absorbent medium, as ashes, land plaster, or powdered earth."

I laced a handful of treated grain in a partitioned box, together with some untreated grain, and put it in a cage containing four birds to see if the pheasants would eat it, if no other food was given. The birds ate up the untreated grain the first day, and apparently refused to touch the treated grain during the next two days, after which it was taken out and the birds fed. This experiment was repeated several times with the same results.

I then set 100 pieces each of untreated and tar-treated corn to germinate. The untreated corn was to act as a check to determine the amount of seed which did not germinate, and the delay in germination caused by the treatment.

Biggest in the Creek



After Dad had hooked the biggest bull trout in the creek, Sonny proudly lugged the king to the frying pan. He's a coming Montana sportsman.

Test No. 1

Time	seed—%	Check—%
2 days	0	30
4 days	16	90
7 days	60	96
8 days	72	98
13 days	74	98

Test No. 2

5 days	18	74
6 days	64	74
7 days	78	98
9 days	78	100

Test No. 3

7 days	86	94
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From this data we may see that the tar-treated grain is delayed from two to four days in germination. A loss in germ inaction of not exceeding 25 per cent in the tar-treated grain may be expected.

In general, pheasants may be classed as beneficial, rather than injurious, to agriculture. Not only are they consumers of large numbers of weed seeds, but both adults and young are partly insectivorous during the summer when insect life is so abundant, and eat many insects which are distinctly beneficial in controlling field mice. Wherever abundant, however, pheasants may injure newly-planted and newly-sprouted grain, especially corn, but these injuries may be controlled at a little expense by coating the seed with coal tar. Individuals or coveys may damage garden truck, in which case they should be trapped and removed, or killed. There seems to be no basis for the belief that pheasants destroy the nests of or interfere seriously with other game birds. The birds are strong fliers of good size and delicious flesh, and may be considered a welcome addition to the fauna of any country.

ELK NEAR GLENDIVE

Editor Montana Wild Life:

I have been a resident of Glendive for the past 25 years, in fact came out to Dickinson, N. D., in 1891 with my parents and have been over the bad lands all up and down the Little Missouri; have hunted deer, both black-tail and whitetail, mountain sheep and bear in this territory and have seen lots of elk horns lying around and there is no doubt they were a native here at one time. Now, what I want to ask is, why can't we have some of the elk that are too numerous up in the mountains put in these bad lands along the Yellowstone river? Seems to me that there are parts of this country down here that would take care of a good many elk. Why not have some of the local game wardens look into this and find out if it would be advisable, and perhaps if they got to be too numerous we could have an open season here and keep them down so they would not bother the ranchers and farmers.

Please give this a little consideration and let me hear what you think of it as we still have some deer both along the river bottoms and in the bad lands and I would certainly like to see an elk once in a while when driving around in the hills.

C. M. STEELE.
211 S. Sargent Ave.,
Glendive, Mont.

MONTANA STATE FISH AND GAME COMMISSION

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MONTANA WILD LIFE

The Official Publication of the State
Fish and Game Department.
Published Monthly at Helena, Montana.

FLOYD L. SMITH, Editor.

Introductory Subscription Rates
15 Cents per Copy—50 Cents per Year.
Advertising Rates on Application.

Copy for advertisements subject to approval of State Commission and must be in the hands of the editor at the State Capitol building, Helena, on the 15th of the month preceding publication date.

VOLUME 1 DECEMBER, 1928 NUMBER 7

THE MEANEST SCOFFLAW

CONSERVATION of game and fish is now recognized as an important national reclamation project. The term conservationist at one time carried with it the conception of a fanatical "spoil-sport" who shuddered at the sight of a gun and lamented as cruel the indulgence and privilege of hunting and fishing. This is no longer true. Enlightened states are energetically carrying out constructive programs for the preservation of hunting, clear streams and remote loveliness. The conservationist of today is he who stands for what is right and is not afraid to protect his share of a square deal.

Game codes are being remodeled to fit well-demonstrated plans of game restoration. Game commissioners are promulgating and influencing common sense laws of bag, season and game propagation. Every dollar of license money paid by hunters and fishermen is used to further these purposes. The game warden, acting in a protective capacity during open seasons, now devotes his time to game breeding during the nesting and rearing period.

One of the greatest difficulties confronting game wardens where conservation in the modern sense is just beginning to gain a real foothold is the apprehension, quick prosecution and conviction of those who violate seasonal hunting laws and bag limits and who indulge in game "bootlegging."

We have unfortunately with us yet "pot hunters" who shoot regardless of season, bag limitations, or trespass laws. They then by devious ways dispose of their kill to game "scofflaws," willing to pay for this panderage.

Wildfowl unlawfully grace the tables of many social elite during the hunting and social seasons and the "kills" reach such tables by the bootleg route. The person who buys is just as guilty in this instance as the person who kills. When game "bootlegging" ceases to be a misdemeanor and becomes a felony for seller and buyer the anchor of conservation will cease to drag.

THIS MONTH'S COVER

ANOTHER striking Montana photograph is presented to readers of MONTANA WILD LIFE on the cover of the December publication. This splendid picture is the work of K. D. Swan of Missoula and is published through courtesy of the United States Forest Service. The panorama is that of the upper and lower Big Creek lakes in the Bitter Root National Forest. Mr. Swan is a sportsman who hunts with a camera and his unusual photographs of wild life and the forest have won national recognition.

MONTANA IS REPRESENTED

THOUSANDS of American sportsmen of the crowded east look toward Montana for their summer vacations, their fishing and hunting. To maintain Montana's prestige the State Fish and Game Commission has continued its campaign of conservation, restocking and planting in forest and stream and results are apparent. Hence, when the sessions of the Fifteenth National Game Conference were called at the Pennsylvania hotel at New York City, December 3 and 4, Montana was especially invited to be represented. After consideration by the Commission, Chairman Thomas N. Marlowe of Missoula and State Game Warden Robert H. Hill were detailed to act as emissaries from the Treasure state. Men whose names are known throughout the nation as authorities on fish and game, conservation and preservation of wild life, were prominent on the extensive program and Montana's missionaries served their state well in carrying the gospel of the west to the metropolis.

THE OPEN SEASON ON CHINKS

CHINESE pheasants, multicolored Mongolian foxes of the field, have given Montana sportsmen a thrilling demonstration of their ability to take care of themselves during the open season. For two days wielders of the scattergun combed the hedges and stubble, the irrigation ditch growth and the tumble weeds for the birds that only a short time before had disdainfully crossed the roads ahead of their cars, scoffed at intrusions and to all appearances taunted hunters to enter their domain. But during the two days, November 24 and 25, but few Chinese pheasants were killed. After continued appeals, the State Fish and Game Commission opened the season in stipulated areas. Many predicted a slaughter because of the manner in which the foxy Chinamen had become domesticated. But the slaughter failed to materialize. The Chinamen seemingly were endowed with superior instinct. They kept under cover. When flushed they scooted to the foothills. And when volleys were fired they zoomed through the pattern. It's safe to say that the bird has adequately demonstrated to sportsmen that he's gamey.

There's no music like a little river's. It plays the same tune (and that's the favorite) over and over again, and yet does not weary of it like men fiddlers. It takes the wind out of doors; and though we should be grateful for good houses, there is, after all, no house like God's out-of-doors. And lastly, sir, it quiets a man down like saying his prayers.—Robert Louis Stevenson.

STATE BUYS 15,000 RABBITS

ENGLISH pheasants and Missouri rabbits to the value of nearly \$28,000 have been ordered by New Jersey for the pleasure of sportsmen. The fish and game commission is also considering the purchase of 500 pairs of Hungarian pheasants, to cost about \$3.50 each.

The rabbits, 15,000 of them, are expected to arrive late in December after the close of the open season and will be liberated in various sections of the state. Since 1922, when the first purchase of approximately 16,000 was made, the commission has bought about 58,000. Records show that 466,563 rabbits were killed in 1926.

About 2,000 of the English pheasants have arrived. They cost \$3.50 each. Last year there were 21,000 ringnecked pheasants liberated from state hatcheries. In addition, the commission supplied eggs to farmers with the stipulation that the birds should be freed after they were grown. In 1926, 75,599 pheasants were killed in the state.

OFFICIAL STATE BIRDS

THERE exists today a movement to have every state adopt officially a state bird. Already there are many "state flowers" so why not have a state bird, is the question raised by the National Association of Audubon Societies which is sponsoring this movement. Hot contests have already developed in many places where the people have been divided in their choice. In one state the selection was made on the ground of a sentiment totally foreign to an interest in the bird itself. This was in Alabama, where after the bird-lovers had virtually decided upon the mockingbird, patriotic women's organizations secured legislative adoption of the yellowhammer because of the fact that a famous Alabama battalion marched away to the Civil war with a yellowhammer feather in each cap. Dr. T. Gilbert Pearson, president of the Audubon Association, gives the following list of states that have adopted state birds: Alabama, yellowhammer; Oregon, Kansas and Nebraska have all chosen the western meadowlark; Maine, the chickadee; Florida, the mockingbird; District of Columbia, the wood thrush; Louisiana, the brown pelican; Missouri, the bluebird; Virginia and Wisconsin, the robin. Contests for a choice are now going on among nature organizations. In these states the interest has extended into the schools and thousands of pupils are registering their preference among their feathered friends.

THE VALUE OF ORGANIZATION

STRIKING demonstration of the value of sportsmen's organization has been brought in a report from Nebraska. An interesting condition concerning the prairie chicken has occurred. This bird was found to be so scarce this year, with an act of the legislature necessary to close the season. Therefore, every Izaak Walton League chapter and farmers' organization pledged that they will not hunt this season. Damp nesting period is the reason for the shortage.

BAND 127,105 BIRDS LAST YEAR

THE NUMBER of birds banded by the United States Biological Survey during the fiscal year ending June 30, 1928, was 127,105, the Survey announces. This represented an increase of more than 35,000 over the number of birds banded during the preceding year and brings the total number tagged since 1920 well above the 400,000 mark. At the end of the present fiscal year there were 1,400 cooperators engaged in banding work under the supervision of the Survey. Of these 24 banded 1,000 or more birds during the year.

GRIZZLY BEAR IS BECOMING RARE

THE BUFFALO was never half as near total extinction as is the grizzly today." This is the startling statement made by Will C. Barnes, assistant United States forester, in summing up the annual game census of the national forests as it relates to the grizzly bear.

The census discloses that there are only grizzly bears in the national forests in the United States, outside of Alaska, and 50 per cent of these are in Montana; not a single individual grizzly is reported from any of the national forests in California, a state in which these animals were once abundant. Nothing could more definitely indicate the necessity for protecting this great carnivorous species, unless it is the intention to pursue it to extermination. The Alaska brown bear also shows a heavy decrease in numbers since the last census and a definite need for curtailing hunting privileges in the limited area where this animal is found.

HOUSE CATS MENACE TO GAME

THERE are two kinds of good cats: Those kept strictly on the owner's premises, and dead cats." This is the opinion of W. B. Grange, superintendent of game for the Wisconsin state conservation commission, who reports that cats have been the greatest menace of all predatory animals to the propagation of pheasants in Wisconsin this year.

"The common house cat is one of the worst menaces to the increase of game birds and small game animals in Wisconsin," said Mr. Grange. "Far too many people in the state, who are too kind hearted to drown an unwanted litter of kittens, will turn them loose in the woods. These

cats develop into the worst kind of predatory animals as far as birds and small game are concerned."

Mr. Grange suggests that cats should be licensed just as dogs. Further, the money derived from licenses would constitute a fund from which recompense could be paid for damage. Farmers who can prove that they have lost sheep or other livestock by predatory dogs can be reimbursed for their loss by the state. Mr. Grange thinks that the same should apply to cats.

In the past dogs have been a constant nuisance in some parts of the state because they chase deer in the woods. This trouble is being done away with now because dogs caught running deer are being shot on sight. Mr. Grange thinks that the same should apply to cats found roaming the woods.

Cheerfulness is to life what perfume is to the flower.

TAGGING MICHIGAN FISH

MICHIGAN conservation commission has recently made arrangements for the tagging of 10,000 brook, rainbow and brown trout before liberation. The fish will receive small metal tags on their gill covers, each bearing a number. They will then be turned loose in streams throughout the state and a study started of their migratory habits. The information sought is similar to that now obtained through the banding of birds by federal government agents, which covers range, food habits, and general distribution.

VERMIN CONTROL PLAN

DECLARING that foxes, cats, weasels and other vermin annually destroy more small game than is killed by hunters, members of the New Jersey board of fish and game commissioners have asked the cooperation of every warden in a campaign to help check this loss.

The board finds that many gun clubs already have organized campaigns to control the vermin in the immediate vicinity of their own hunting grounds. Foxes and stray cats are regarded by sportsmen as the two chief menaces to rabbits, quail, pheasant and grouse, and where these animals have been thinned out in a community the game rapidly has increased.

It is said it is difficult to induce the Filipinos to live within their incomes. Americanization appears to be making progress there.

WISCONSIN SPARES THE HAWKS

THE Wisconsin Game Commission takes exception to the theory that the only good hawks are dead hawks and declares in a circular to the public that only two kinds of hawks found in that state do any appreciable damage; namely the Cooper's and the Sharp-shinned hawks. The commission protests against wholesale shooting of hawks and declares that the Marsh, Red-shouldered, Red-tailed, and Sparrow hawks are beneficial.

W. B. Grange, Superintendent of Game of the Wisconsin Conservation Commission, is authority for the classification of hawks in that state and takes the responsibility of advocating protection for all but the two kinds named above.

Sportsmen generally are not disposed to accept the judgment of ornithologists as final in this matter. There is evidence that the Marsh hawk and the Red-shouldered and Red-tailed are on occasion guilty of much depredation on game birds. It is admitted that the Marsh hawk is responsible more than any other one factor for the failure to preserve the heath hen on Martha's Vineyard. Allan Brooks, the well known Canadian naturalist, furnishes unquestionable proof of the very great destructiveness of the Marsh hawk on the breeding grounds of waterfowl. As a matter of fact there is not sufficient evidence at hand on which to base any arbitrary assumption as to the relative good and bad in hawks. Much more information is needed.

Meanwhile, it would be well to protect the breeding grounds of game birds from hawks and crows. There is very little doubt but what much destruction can be traced to these birds in such places. This is not to say that they may not be beneficial under some circumstances.

Sportsmen Feed Snowbound Deer

AFTER smiling skies of a mellow Indian summer had kept winter away until about December 1, upsetting the dispositions of hundreds of Montana sportsmen because of the lack of deer tracking snow, the northwest has been in the grip of snow and cold that has, in many cases, threatened food supplies of deer and elk. Despite the fact that fickle Nature deprived them of their annual chunk of venison by shielding whitetails and black, sportsmen have responded and are feeding the animals in spots where hay is required.

Farmers have become interested in caring for the deer as well as game birds. When necessity arises they have distributed alfalfa as well as wheat and in all cases they have found the State Fish and Game Commission willing to cooperate with them.



Bales of alfalfa hay are being fed to deer on the Kootenai river. Note the holes eaten in the hay by the hungry animals.

The accompanying pictures, taken in the Kootenai river district of Montana, demonstrate the peculiar habits of the deer and their eagerness to accept the food offered by sportsmen. They are largely night feeders, spending the days snoozing on open hillsides where the atmosphere is balmy.

In Glacier National Park as well as in Yellowstone authorities are maintaining open air boarding houses for

the deer and elk. They pay but little attention to the caretakers with their sleds laden with hay but are keenly interested in partaking of the food when snow covers their grazing grounds. The annual begira of elk from the Yellowstone Park into the Gardiner district is due. The open season on elk in that vicinity extends until December 20. Reports from West Yellowstone indicate that the elk started moving from that part of the park several days ago when a seven-inch snowfall started them.



Alfalfa fed to deer on the Kootenai. Note the shed horns in the foreground.



Hay fed at this point saved many deer from being killed by night trains as it kept them away from the alfalfa stacks on the river where they were in the habit of night feeding and crossing the tracks to reach the stacks. About 50 deer are feeding regularly. In the daytime they may be seen on the hillside south of the hay, lying around in groups of two and three.

Hunting Season Ethics

By SETH E. GORDON, Conservation Director, Izaak Walton League of America

THE IZAAK WALTON LEAGUE is constantly striving to improve outdoor conditions, to increase beneficial wild life, and to make all America a more attractive and enjoyable outdoor land. No period of the year presents a greater need for directing the attention of the American people to suggestions for proper outdoor conduct than the hunting season.

Many outdoor writers devote columns to such matters as where to hunt, how to bag game and the kind of equipment to use. Such basically essential problems as perpetuating and increasing the game supply, improving the relations between farmers and sportsmen, and saving human life are items which are invariably neglected.

The Izaak Walton League believes that clean sportsmanship, an even break for both the hunter and the hunted, constant vigilance to prevent accidents, and a square deal for the land owner are matters which can not be stressed too forcefully. America needs more real sportsmen pulling together in a common cause. We need less of the "hoodlum" element.

Observance of the following suggestions will help perpetuate America's scheme of publicly-owned game and assure more and better sport for everybody:

1. A human life is worth more than all the game in America—see clearly before shooting.

2. Carelessness with firearms is

criminal—play safe and avoid accidents.

3. Healthful recreation and the thrill of the chase are a true sportsman's prime objectives always.

4. Observance of the law and eradication of the game hog are responsibilities no sportsman can evade.

5. A few fools with matches kill more game than many shotguns—prevent fires.

6. Only vandals destroy farmers' fences, injure their stock or disregard their wishes.

7. Real sportsmen never try their skill about farmyards, pastures and on trespass signs.

8. Saving ample seed stock, and feeding it during the wintertime, will perpetuate the sport.

Have You Killed a Banded Duck?

AS A MEANS of obtaining precise information relative to North American wildfowl, the Bureau of Biological Survey of the United States Department of Agriculture, with the aid of volunteer cooperators throughout the country, is engaged in banding large numbers of birds. The bands are made of aluminum or copper, and in addition to a serial number they carry the legend "Notiv Biological Survey, Washington, D. C."

Montana sportsmen and those in other states are requested by the Department of Agriculture to aid in these investigations by reporting to it all banded birds that come to their attention. In addition to the number that is on the band attached to the bird's leg, the date and place of capture should be given. In reply the department will supply the banding record to the person rendering the report.

At the opening of the 1928 hunting season between 15 and 20 stations were in operation for the banding of these birds, while at many others birds have been banded in large numbers in pre-

vious seasons. These stations extend from Maine and South Carolina on the Atlantic coast to Washington, Oregon, Montana and California in the west, with others in the Canadian provinces and in Alaska. More than 30,000 ducks and geese have been banded, and valuable information already has been received from the reports sent in by hunters. Sportsmen accordingly are urged to examine the ducks and other wildfowl they kill and report every band obtained.

The following records from the banding files of the Biological Survey will illustrate the character of the information that is being accumulated: A mallard banded at Leduc, Alberta, on October 23, 1926, was killed at Robertson Lake, Texas, on November 27, 1926. Two mallards banded at Browning, Ill., in November, 1922, were killed, one near Sacramento, Calif., in December, 1923, and the other in Glascock county, Georgia, in November, 1924. Another mallard banded in January, 1923, at Culver Island, Mo., was killed in June of the same year at Willow Lake,

Mackenzie. A baldpate, or widgeon, banded in August at Davidson, Saskatchewan, was killed near Houston, Texas, in December of the same year. A green-winged teal banded at Avery Island, La., in December, 1922, was killed in September, 1923, at Lethbridge, Alberta, and three others banded at the same time and place were recovered in the fall of 1923 and 1924 from points in the Sacramento Valley, Calif. Another of these little ducks, banded on the Bear River marshes, Great Salt Lake, Utah, in July, 1926, was killed in November of the same year in the State of Sinaloa, Mexico.

The problems studied by this method of research chiefly relate to the mysterious migrations of birds. New and pertinent facts are continually being brought to light through an intensive application of the banding method, and it is to aid these investigations that Montana sportsmen are asked to cooperate by reporting all banded wild ducks and other species killed during the season which closes December 31.

Glacier Park Deer Have Open Air Boarding Houses



Superintendent Eakin of Glacier National Park finds that many of the animals would be unable to get natural feed through the deep snow, and open air boarding houses such as that pictured above have been a big factor in preserving the deer life of the park. They pay little attention to the caretaker pitching alfalfa out of the sled.

Yip-Yap Is Enemy of Wild Life

HES A TOUGH hombre, this Senor Yip-Yap!

The ranchers are against him. Poultry raisers thirst for his blood. Sheep men breathe easier when they know one of his tribe has met death. Even the federal government through the Biological Survey is on his trail month after month with a band of trained, keen, paid hunters. And yet this Senor Yip-Yap keeps on increasing or holding his own in his old ranges. As good measure, he pops up in another part of the country where he was never heard of before, starts murdering sheep and raiding hen roosts just as though he had always lived in that neck of the woods.

If anyone tells you, says an interesting article in December Sunset, that the government and ranchers combined are about to obliterate one of the most picturesque animals of the old west through their campaign against the coyote—and it sounds reasonable that no four-legged critter could persist with such warring as has been planned against him—then just tuck a few of the following facts away in your head regarding the tribe of Yip-Yap, the coyotes of the western ranges:

Formerly the coyote was pretty generally confined to the great plains area. Now he has spread out like the advance scouts of an invading army all the way into Alaska. He has made himself at home in the region west of the Cascade Mountains in Oregon. He has migrated to the old burned-over land in the upper peninsula of Michigan.

Even the Empire State has a coyote problem. In Orleans county, New York, a small band has made its appearance and in the past year has levied a toll of \$10,000 on the sheep industry in this new stronghold.

Another evidence of adaptation is being demonstrated by the coyote. Formerly he did not attempt to kill the larger animals. He would rarely attack stock. But of late years coyote kills of beef stock are increasing. With the old gray wolf gone, the coyote must slaughter his own beef and he is finding ways to do it.

Wild game is also suffering from the attack of Yip-Yap. Deer, full grown and capable of taking care of themselves under normal conditions, stand no chance at all when coyotes catch them in heavy crusted snow that will carry the weight of the coyote crew but will not bear up under the sharp horny hoofs of the deer. A little struggling, a little fighting perhaps, and the doe or buck is changed from the beautiful thing of the forest wilds into warm steamy coyote meat. Within the past few weeks a pack of coyotes pulled down a buck deer in the eastern foothills of the Medicine Bow mountains in open country after a wild

chase. Yip-Yap is becoming a killer of big game.

Can a coyote kill ducks? Perhaps he is not quite fast enough to pounce on teal or mallard as they rise from the water, but he does steal eggs from their nests. He has been seen in nearly a half foot of water in the lakes in San Luis Valley, wading around, nosing into the tules, hunting for the nests of the ducks. That this was what he sought has been proven by finding many nests of wild ducks robbed by coyotes.

Still another way the coyote horde is a menace on western stock ranges. He carries rabies.

At least three outbreaks have occurred. About twelve years ago rabid coyotes were found in Nevada. They carried the disease into Utah and California, thence to Idaho and eastern Oregon. The first organized campaign against the coyote occurred as a result of this outbreak of the dread disease. Field parties were sent out, the best methods then known in poisoning and trapping were followed. It took a full two years to stamp out the rabies and get the situation under control.

Another outbreak occurred in Washington. The most recent was in the cow and sheep ranges in the southern sections of the San Isabel national forest of Colorado. Stock, domestic dogs and scores of coyotes ranging in that land of beautiful and picturesque mountains, were victims of the disease before the campaign finally blocked the attacks of the rabid coyotes. The dis-

ease even appeared on the west side of the Sangre de Cristo mountains, a high line of peaks in the San Isabel forest. Coyotes crossing the range in the neighborhood of Pass Creek carried the disease into the valley west.

But it is in the field of livestock depredations and the slaughter of poultry and young things that the coyote has built up reason for his drastic control if not obliteration. Newly born calves, pigs, deer, elk, baby grouse and even song birds are his special prey. About 70,000 head of livestock were killed by predatory animals on the ranges of western national forests in one year recently. Coyotes were the cause of much killing, particularly in the flocks of sheep that move up the slopes as summer pushes back the snow banks and brings bright green to the timberline grazing allotments.

This killing of stock, killing of game, the slaughter of uncounted wild birds, has all led to the big fight that men have been directing against the tribe of Yip-Yap.

UNBEARABLE

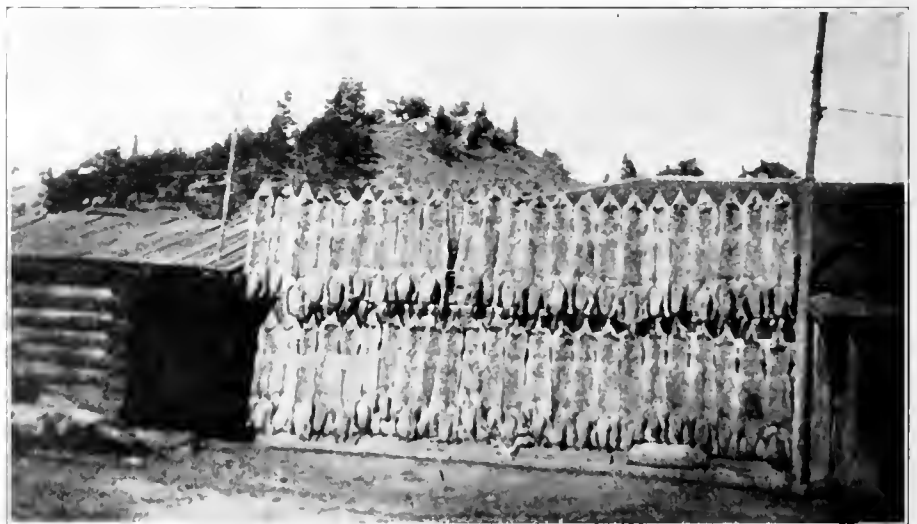
The applicant for cook was untidy and insolent in appearance.

"Don't hire her," whispered Jones to his wife. "I don't like her looks."

"But," remonstrated his wife, "just consider the reputation for cooking she bears."

"That doesn't matter," said Jones, testily. "We don't want any she bears cooked. We don't like them."

Montana Hunters War on Coyotes



This catch of coyotes, taken in the one month of November by E. B. Warren, has been responsible for the destruction of many game birds and animals. This is but another demonstration of the effective work being done by predatory animal hunters.

Antelope Fights Coyotes



Montana
Antelope

ACTUAL observation of the defense of their young against coyotes by antelope is described in *The Service*, as related by Ben Kroll, government hunter in the predatory animal control service of South Dakota. Montana sportsmen who are protecting what few of the little animals that remain in the Treasure State will be interested. Mr. Kroll's observations also included the

collection of evidence against the coyote as a destroyer of antelope and game birds. He says:

"We received a call from the keeper of the state antelope preserve to send a hunter there, as he was having trouble with a pair of coyotes inside the preserve. Ben Kroll was hired for the work and spent the first two days on the top of a high butte in the center of the preserve, called Antelope Butte, watching the maneuvers of the pair of coyotes that he soon located. By the use of field glasses he could get a good view of everything they did. Toward evening two coyotes came out of a brushy draw and started working up

wind to where a small bunch of antelope were lying down. When the coyotes were within about a hundred yards, they began to separate and work back and forth hunting. The old antelope began to get very nervous and occasionally one would whistle. Several bucks at once came to the bunch and began to chase the coyotes and strike them with their forefeet. The coyotes would dodge the attack and then make a run at the antelope, but the latter would outrun them. As soon as the antelope let up their attack the coyotes would go hunting again and this would start the antelope to fighting once more. The antelope finally drove the coyotes away. The fight was too fast to venture a shot for fear of hitting an antelope.

"Along the latter part of the evening of the second day one coyote came out to a spot where three female antelope had been for two days, with young hidden close by. This coyote tried to hunt out one of the young. There were only three old ones this time to do the fighting. When the old coyote got too close, first one and then another of the antelope would make a mad rush. Several times in dodging the coyote had to roll over to keep from being cut to pieces by the sharp feet of the antelope. The fight lasted for about half an hour before the coyote was driven away, and while it lasted it was not safe to risk a shot at the coyote.

"The next day I was with Mr. Kroll, and after a short time we located the den not over 60 rods from where he had witnessed the two fights. We got one of the keepers to help dig out the den, and in it were found the remains of three young antelope and the wings and feathers of a number of sage hens and grouse, scattered about near the part where the pups were. We got out six pups and upon examining their stomachs found them to be full of the flesh of young antelope. Traps were placed for the old ones. The next day Mr. Kroll shot the male coyote, and when we examined his stomach we found it full of sage hen eggs—over a quart of them. The old female got out of the preserve and had not returned when I left.

"While I was at the preserve I saw about 75 little antelope. There were a number of twins and one bunch of triplets. I watched the old one hide them, and when she had gone I tried for an hour to find them but had to give it up. Then both the keeper and I made another hunt, but failed. The little ones are concealed in cactus patches, where it is very difficult to get to them. The old mother antelope feeds the little fellows about every three hours, staying with them not over ten minutes at a time. As soon as they are through feeding they are hidden and the old one leaves them."

Laws To Save Nation's Wild Life

ANATIONAL COMMITTEE ON WILD LIFE LEGISLATION has been organized at Washington, D. C. It is generally recognized as the most advanced step ever taken in behalf of the wild life of America, and will bring about a coordinated nationwide movement such as has never before been possible.

This committee was organized in compliance with a resolution passed at a joint convention of conservation officials and leaders of organizations at Seattle the latter part of August.

The personnel of the committee consists of Dr. T. Gilbert Pearson, president of the National Association of Audubon Societies, New York City, chairman; Carlos Avery, president of the American Game Protective Association, New York City, vice-chairman; Seth E. Gordon, conservation director of the Izak Walton League of America, Chicago, secretary; Dr. John C. Phillips, president of the American Wild Fowls, Wenham, Mass., treasurer; and Messrs. George D. Pratt, president of the American Forestry Association,

New York City; E. Lee LeCompte, State Game Warden of Maryland, representing the International Association of Game, Fish and Conservation Commissioners; R. G. Parvin, State Game and Fish Commissioner of Colorado, representing the Western Association of Fish and Game Commissioners; I. Zellerbach of the California Game and Fish Commission; I. T. Quinn, State Game and Fish Commissioner of Alabama; Keith McCanse, State Game and Fish Commissioner of Missouri, and Gustavus Pope of Detroit.

Members of this committee are all recognized leaders in conservation affairs, and because of their geographical distribution throughout America will bring together the best thought of the entire nation on this important subject.

In addition to perfecting an organization and laying plans for future activities, the committee decided to make the Norbeck Migratory Bird Refuge Bill, which has passed the senate and is now pending in the house, its first order of business. Government officials concerned, as well as other con-

servation leaders, were invited to appear before the committee. After due deliberation the committee decided to support the Norbeck bill in principle as it now stands, but will recommend such minor amendments as may be desirable to make it effective.

In effect this means that the plan is to secure from congress an annual appropriation of one million dollars for the creation of inviolate migratory bird refuges throughout the entire country rather than ask the sportsmen of America to contribute the funds through a federal hunting license. It also means that the government will not undertake to supply and administer public hunting areas adjacent to these refuges, but will leave that matter entirely in the hands of the several states.

There has been determined opposition to both the federal license and the public hunting grounds features of the original bill, and the committee believes the plan above outlined will meet with universal approval.

Licenses Hit New Record

INCREASING demands for Montana hunting and fishing licenses promise to send the 1928 figure to a new high record. At the start of the season, before the opening of the fishing season in May, State Game Warden Robert H. Hill sensed the increasing demands made upon Montana fields and streams and ordered a supply of 90,000 blank licenses for state residents. Little more than a week ago this supply had been exhausted and it was necessary to send a rush order to the printer for additional blanks. Many of these are in the hands of dealers in books which have not been issued, but the supply at head-

quarters at the state capitol at Helena was a blank.

In 1925 the total resident licenses issued totaled 73,042.

In 1926 the total decreased somewhat and at the close of the year the figure was 71,249.

Figures compiled at headquarters of the Commission as of December 1, 1928, show that 65,865 resident licenses have been issued with hundreds of dealers yet to report and 30 days remaining in the year.

The following table shows the sales of licenses and funds received since the fishing season opened in May:

1928	Res. H. & F.	Non- Res. F.	Gen. Non-Res.	Lim. Non-Res.	Gen. Alien	Alien Fishing	Total
May	\$ 2,098	\$ 360.50	\$ 210	\$ 10	\$150	\$ 410	\$ 3,238.50
June	39,374	1,613.50	60	.....	.....	1,080	42,127.50
July	29,130	2,516.50	60	20	50	460	32,236.50
August	21,216	4,361.00	30	20	.....	230	25,857.00
September	14,884	2,740.50	.....	150	.....	120	17,894.50
October	15,048	1,428.00	510	560	150	170	17,866.00
November	9,980	479.50	1,770	170	100	140	12,639.50
Totals	\$131,730	\$13,499.50	\$2,640	\$930	\$450	\$2,610	\$151,859.50
No. Licenses.....	65,865	3,857	88	92	9	261	70,173

Tule Lake Bird Refuge Established in California

Public Shooting Grounds Provided in Southern Portion

BY EXECUTIVE ORDER, President Coolidge has created the Tule Lake Bird Refuge in northern California, thus bringing to 80 the number of wild life reservations administered by the Bureau of Biological Survey of the United States Department of Agriculture. The new refuge consists of 10,300 acres of government lands in northeastern Siskiyou county, within the Klamath irrigation project. These lands are flooded to a considerable extent by waste water and thus form an excellent waterfowl resort.

Paul G. Redington, chief of the Biological Survey, states that it is a most important addition to the list of wildfowl refuges established by executive order and by acts of congress. Tule Lake has long been the Mecca for such wildfowl as the mallard, redhead, ruddy duck, cinnamon teal, avocets, stilts, and other shore birds. It also is a favorite wintering ground for the cackling geese, a bird that breeds on the north-west coast of Alaska.

The layout of the area is such, due to mud conditions along the shores, that a natural refuge has existed in the northern part of the Tule Lake area, but sportsmen have in the past found their recreation on other portions of the area. In order not to mete out undue hardship to these sportsmen, it was deemed advisable to allow a con-

tinuance of hunting privileges on an area at the southern end of the lake, and accordingly the secretary of agriculture on October 10 approved an order permitting hunting on 2,800 acres south of the line forming the north boundary at Sections 33 and 34 of Township 47 North, Range 4 East, Mount Diablo Meridian. The inviolate refuge, therefore, comprehends 7,500 acres of land extremely valuable for resting and feeding grounds for the birds which frequent the area.

Mr. Redington further states that this refuge, which lies just south of the

California-Oregon line, will supplement the Clear Lake refuge in California, just east of Tule Lake, and the recently established Upper Klamath refuge, on the west shore of Klamath Lake, in Oregon. A year ago it was announced that because of lack of water a reflooding program on Lower Klamath Lake, west of Tule Lake, would have to be abandoned. The establishment of the refuge, therefore, on Tule Lake will in a measure offset the loss of possible sanctuary caused by the abandonment of the Lower Klamath project.

It is further stated that because of the encroachment of industrial and agricultural development the wildfowl have in many areas throughout the United States lost their former homes and stopping places, and that the government in its obligations under the Migratory Bird Treaty with Great Britain is steadily working for the re-establishment of suitable water areas so that the wildfowl may regain something of what they have lost. The setting aside of such areas strategically located along the principal lines of migration will probably do more for the future welfare of the wildfowl than any other one measure. Protective laws relating to seasons and bag limits are in effect and play their part in the conservation of ducks and geese, but these will be of little avail if they are not backed by the establishment of refuges such as the one just set aside.

THRIFTY SANDY

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Montana Buffalo Being Thinned Out for Holiday Meat

Rifleman in the employ of W. S. Custer of Missoula are thinning out the herds at the bison farm 35 miles east of Gardiner in Yellowstone Park and on the U. S. Biological range at Moiese.

At the buffalo farm in Yellowstone Park 125 head of culled steers will be killed and prepared for shipping to eastern and western markets. Mr. Custer, who bought the animals from the government, and Ray Richley, both of Missoula, are in the field. Recent reports state that there is a ready market for the meat as soon as it can be prepared and shipped.

One concern in Chicago has ordered 40 head. Other concerns are placing heavy orders and all of the animals killed this year will find a ready market.

Upon completing the work in Yellowstone Park, Mr. Hegelson will go back by way of Missoula and proceed direct to Moiese, where he will slaughter from 125 to 150 head of bulls and cows now ranging on the bison range. The animals are to be selected by C. H. Rose, superintendent of the range, from the herd of approximately 600 bison. Eighty-five head of elk will also be killed at Moiese, which will thin that herd down to the best stock and allow those remaining better range conditions.

The animals taken from the bison range at Moiese will be shipped all over the United States wherever orders have been secured.

Tipping your hat may make you friends, but taking off your coat makes you money.

Sportsmen and Game

CAPTAIN EDWARD C. CROSSMAN, the well known authority on game and sporting arms, writing in opposition to large bag limits, says: "The only way to justify such a bag limit is when the man or club produces the ducks they kill as the British sportsmen produce their pheasants." This is exactly in line with the idea proposed long ago by the American Game Protective Association and recently elaborated on by the former president of this association, Mr. John B. Burnham, in an article in the North American Review. It would seem reasonable to permit more liberality in shooting privileges to the man who is willing to go to the necessary trouble and expense of producing the game that he kills.

It is entirely possible to produce mallard ducks in this way so that private clubs and individuals may enjoy very liberal shooting privileges without interfering at all with the supply of birds bred in the wild. Encouragement of the breeding of ducks in this way would also tend to increase the wild supply because many

of the birds would escape and join their wild companions.

It is a matter well worth looking into on the part of sportsmen's clubs where interest in waterfowl shooting prevails throughout the country.

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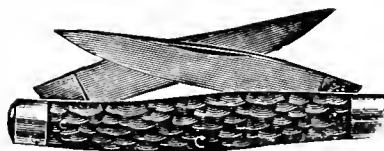
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The Farmer's Stake in Conservation

By TOM WALLACE, Editor Louisville, Ky., Times, in American Game

AS I WAS born on a farm—thirty-five miles from tram smoke—and sleep on a farm, twelve miles from my desk at The Louisville Times, because that is about as near as I can come to living on a farm and meeting the requirements of an urban occupation, I believe I know something about the farmer's stake in general conservation.

I say "general conservation" because fish and game conservation, to get anywhere, must be linked with forest conservation, which conserves the supply of water for streams and lakes, and anti-pollution, which makes, or keeps, the water of streams and lakes, springs and wells, fit for fish, and human beings, to use as God intended it to be used.

When I was a boy, on a 1,400-acre farm in western Kentucky, the clearings surrounded by virgin forest, there was no butcher shop within seventeen miles, and maybe not at the end of the seventeen miles of earth road, over a knob country, which ran to the county seat. I say "maybe" because I can not recall having heard any one in our household mention a butcher shop as a necessary source of table supply. We killed a fat mutton occasionally, in winter when the meat would keep, and more rarely, a bullock. But as a rule the contents of a large smoke house in which hung hams, shoulders, jowls, middlings and the furred and winged contents of forest and field, and the finned contents of river, creek and lake provided all of the "fish, flesh and fowl" any family could want, and we devoted little thought to "good red her-
ring."

In those days, in that region, a tenant house cost nothing but the labor of felling the trees, bewing and notching the logs, riving the boards for the roofing, splitting out the oak rafters, dressing down the puncheons for the floor, with the adze, or hauling a log to the sawmill and having the floor planking made. Well, yes, there were window sashes to be bought, and metal hinges might be used on the door, and even a lock with knobs, instead of a wooden latch, with the string hanging out in daytime, a welcome to the stranger or the neighbor. But the cost of the trimmings was little.

Firewood? Acres, tens of acres, hundreds of acres, thousands of acres surrounded the farming country. Rails for fences? Countless in the oak and ash, and even the black walnut, for the splitting.

It didn't cost much to live. Coppers were not used. The smallest change was a nickel. If you bought a yard of calico which was priced at 16 cents you paid 15, or you paid 20. A copper coin was a curiosity. But money was not used as often as it is where everything that is used must be bought, and the fact that pennies were not in circulation didn't seem to bother any one.

There was always hunting, and by that I mean good hunting. The deer had not been killed out, by reckless shooting of does, fawns and bucks alike. The wolf traps were rusting in corners, in disuse. But turkeys, ducks, geese, squirrels, coons, possums, quail—rabbits were killed if they got in the way rather than because they were regarded as game—swarmed.

Expert riflemen—using cap-and-ball rifles—scorned to shoot a squirrel save in the head, as a rule, and I have seen a man come in in the early forenoon with thirty squirrels, bagged since daylight, his bullet driven home with a hickory ramrod before each shot. I knew one man who liked squirrel brains. He always shot his squirrels in the forequarters, that neither the brain, the saddle nor the hind quarters should be torn by a bullet.

Any day in spring, after corn planting time and before the corn was a foot high you could walk along the edge of a large cornfield bordered by the woods and see turkeys in the field. They were wary and difficult to shoot, distant dark spots on the cornland, moving slowly about, picking up corn.

Any boy could kill ducks, on the wing or on the water, and geese, more difficult game, fell to the guns of experienced hunters. The river was often literally "black" with both kinds of waterfowl, and in the sloughs along the river the ducks especially were plentiful.

Fishing? The creeks and the lakes, the latter along the river in the bottom land, or, in some cases on islands in the river, provided game fish. Jug fishing in the river, or trotline fishing, was rewarded by catches of large fish,

the cats sometimes running to 80 or 100 pounds.

Many of the woodland streams were so clear that a boy fishing for small fish—up to a half pound or so—could see them take the hook. And swimming in such water, in the cool depths of the untouched forest, was a summer diversion hardly matched by "bathing" at a summer resort.

The farmer's stake in conservation is just this. Pennsylvania now has hunting—restored hunting—which Seth Gordon says is better—in so far as big game is concerned—than it was when Daniel Boone explored Kentucky. Even if Seth, formerly of the Pennsylvania Game Commission and now Conservation Director of the Izaak Walton League, exaggerates a bit, and maybe he does, it is a fact that they are killing plenty of deer, in fact have too many in places, and 800 bear a year, in Pennsylvania, and I heard a fellow say that he saw brook trout in a stream within the town limits of Bradford, in that state; even if Seth does exaggerate they have brought back in Pennsylvania a good deal of that which made life easy; made living cheap and made entertainment, for boys and men, plentiful, in western Kentucky in my boyhood. And they are bringing back the forests in Pennsylvania, and in New York, and in sundry other states. And all of this can be done in every state.

And who has a greater stake in its being done—without cost to him, and while he sleeps—than the farmer who is a little sore because boys leave the farm, and a good deal sorer because it is so god durned hard to make buckle and tongue meet, farming, with about as much to buy as there is to sell, because the forests and the fish and game are gone, and the soil so depleted?

Cow Elk Killed Out of Season



Here's another example of the work of the vandal who prowls the woods and shoots regardless of state fish and game laws. The carcass of this cow elk was found before the season opened in the Blackfoot country on Copper Creek near Lander's Fork by Otto Huntenberg and Daniel Haupt, Helena sportsmen. The vandals who had killed the animal illegally took the right hind quarter and the loins and left the remainder for predatory animals. The carcass was still fresh when the Helena men, who were fishing in the vicinity, found it. The picture was taken by Mr. Huntenberg.